

CLAIMS

1. A high-durability photocatalyst film which is a laminated film having (A) a substrate film, (B) a protective layer formed on one surface thereof and (C) a photocatalytically active material layer formed thereon and having photocatalytic functions,

which uses, as said substrate film (A), a film (1) having a total light transmittance of 85 % or more, a haze of 5 % or less and a yellow index (YI) of 10 or less after a 3,000 hours' accelerated weather resistance test of the film having a thickness of 50 μm with a carbon arc type sunshine weatherometer (irradiance level 225 W/m^2) and (2) having a haze change of 1 % or less after the film surface is wetted with methyl isobutyl ketone, is left for 20 seconds and then has a liquid driven away by spin coating (1,500 rpm, 20 seconds),

and which uses, as said protective layer (B), an organic-inorganic composite graded film having an organic polymer component on the substrate film side and a metal oxide compound component on the opposite side and having contents of the two components which contents continuously change in the thickness direction,

said laminated film having a total light transmittance of 85 % or more, a haze of 5 % or less, a yellow index (YI) of 10 or less and a water contact angle of 10° or less after a 3,000 hours' accelerated weather resistance test with a carbon arc type sunshine weatherometer (irradiance level 225 W/m^2).

2. A high-durability photocatalyst film which is a

laminated film having (A) a substrate film, (B) a protective layer formed on one surface thereof and (C) a photocatalytically active material layer formed thereon and having photocatalytic functions,

which uses, as said substrate film (A), a film (1) having a total light transmittance of 85 % or more, a haze of 5 % or less and a yellow index (YI) of 10 or less after a 1,000 hours' accelerated weather resistance test of the film having a thickness of 50 μm with a carbon arc type sunshine weatherometer (irradiance level 255 W/m^2) and (2) having a haze change of 1 % or less after the film surface is wetted with methyl isobutyl ketone, is left for 20 seconds and then has a liquid driven away by spin coating (1,500 rpm, 20 seconds),

and which uses, as said protective layer (B), an organic-inorganic composite graded film having an organic polymer component on the substrate film side and a metal oxide compound component on the opposite side and having contents of the two components which contents continuously change in the thickness direction,

said laminated film having a total light transmittance of 85 % or more, a haze of 5 % or less, a yellow index (YI) of 10 or less and a water contact angle of 10° or less after a 1,000 hours' accelerated weather resistance test with a carbon arc type sunshine weatherometer (irradiance level 255 W/m^2).

3. The high-durability photocatalyst film of claim 1 or 2, which has an adhesive layer (D) on that surface of the substrate film which is opposed to the photocatalytically active material layer side.

4. The high-durability photocatalyst film of claim 3, which has a peel film on the surface of the adhesive layer (D).

5. The high-durability photocatalyst film of any one of claims 1 to 4, which has a protective film on the surface of the photocatalytically active material layer (C).

6. The high-durability photocatalyst film of any one of claims 1 to 5, wherein the organic-inorganic composite graded film as the protective layer (C) is a product formed by applying a coating agent prepared by together hydrolyzing (a) an organic polymer compound whose molecule contains a metal-containing group capable of bonding to a metal oxide by hydrolysis and (b) a metal-containing compound capable of forming a metal oxide by hydrolysis, such that the formed product has an amount, as a component (a), of 0.5 to 5.0 g/100 m².

7. The high-durability photocatalyst film of claim 6, wherein the metal-containing compound capable of forming a metal oxide by hydrolysis, as component (b), is tetraalkoxytitanium whose alkoxyl group has 1 to 5 carbon atoms.

8. The high-durability photocatalyst film of any one of claims 1 to 7, wherein the substrate film (A) is an acrylic resin film or a polyethylene terephthalate film which is surface-coated with a crosslinking acrylic resin containing an anti-weathering agent.

9. A structure produced by forming the high-durability photocatalyst film recited in any one of claims 1 to 8 and a photocatalytic function on a surface.